
Exam Review: Unit 3

- Vocabulary

Integers

Number line

Variable

Expression

Equation

Solution

Patterns

- The table below shows the temperature of cities in Canada. Look at the table and answer the questions below.

City	Temperature in April (°C)	Temperature in October (°C)
Toronto	− 4°C	+ 16°C
Calgary	− 15°C	− 13°C
Vancouver	+ 9°C	+ 4°C
Montreal	− 2°C	+ 6°C
Ottawa	− 8°C	+ 2°C
Saskatchewan	− 26°C	− 32°C
Winnipeg	− 12°C	+ 4°C

- Find the difference in temperature of the two months for each city.
 - Which city has the biggest temperature difference?
 - Which city has a lower temperature in April, Montreal or Ottawa?
 - How much more warmer is Calgary than Saskatchewan in the month of October?
 - Arrange the cities from the least to the greatest temperature for the month of October.
- A submarine is 120 ft below the sea level. It rises by 40 ft after which it dives 80 ft. After a while it submarine dives further 20 ft and then rises by 35 ft. Finally it dives 5 ft and rises 50 ft. What is the current depth of the submarine?
 - Ms. Philip is playing a game of cards at a fair. She earns a dollar for every win and loses a dollar for a loss. Ms. Philip wins the first 14 games, becomes over confident and loses the next 25 games. She then wins the next 12 games and loses the next 6 due to bad luck. She finally ends the day with a 10 game winning streak.
At the end of the day how much money did Ms. Philip make or lose?
 - Write down in words the strategy for adding or subtracting two integers.
 - Write down in words the strategy for multiplying or dividing two integers.
 - Ms. Philip is comparing two integers. She says the first number is smaller than then second. Katie points out that she forgot put a negative sign before the numbers. Ms. Philip changes the signs but says the first number is still smaller than the second. Is Ms. Philip correct?

7. Evaluate:

- a) $(-5) - (+3)$ b) $(-25) + (+100)$ c) $(+33) + (-4)$ d) $(-23) + (-4)$
e) $(+17) - (-17)$ f) $(-18) - (-7)$ g) $(-36) - (+12)$ h) $(-6) + (-2)$

8. Write down in words the strategy for multiplying or dividing two integers.

9. Evaluate

- a) $(-4) \times (+3)$ b) $0 \times (-1234)$ c) $(-6) \times (-4)$ d) $(-9) \times (-4)$
e) $(+7) \times (-12)$ f) $(-18) \times (-5)$ g) $(-6) \times (80)$ h) $(-5) \times (-2)$
i) $(-40) \div (+5)$ j) $0 \div (-842)$ k) $(-60) \div (-4)$ l) $(-90) \div (-5)$
m) $(+7) \div (-7)$ n) $(-18) \div (-6)$ o) $(-16) \div (2)$ p) $(-15) \div (-3)$

10. Consider the number pattern: 3, 5, 7, 9....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 80th term in the pattern?

11. Consider the number pattern: 13, 18, 23, 28....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 70th term in the pattern?

12. Consider the number pattern: 1, 5, 9, 13....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 60th term in the pattern?

13. Consider the number pattern: 100, 97, 94, 91....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 40th term in the pattern?

14. Consider the number pattern: 2, 4, 8, 16...

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 40th term in the pattern?

15. Explain how the pattern in question 10 is different from patterns in questions 6-9.

16. Consider the number pattern: 3, 9, 27, 81....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 40th term in the pattern?

17. Consider the number pattern: A, B, C, D, E, A, B, C, D, E....

- Describe the pattern in words.
- Write the next three terms in the pattern.
- What is the 40th term in the pattern?

18. Evaluate for $x = 8$.

a) $x + 7$

b) $3x - 10$

c) $4 - \frac{x}{2}$

d) $\frac{1+x}{3}$

19. Solve the equations.

a) $x + 7 = 12$

b) $3 - x = 4$

c) $4 + x = 32$

d) $9x = 99$

e) $\frac{x}{2} = 5$

f) $3x = 51$

g) $2x - 5 = 51$

h) $4 - \frac{x}{2} = 12$

i) $\frac{(1-x)}{2} = 9$

j) $7 - 2x = 11$

k) $\frac{1+x}{3} = 4$

l) $\frac{7-2x}{3} = 15$

m) $-3x = 18$

n) $4x - 3 = 17$

o) $5 - \frac{x}{6} = 5$

p) $3 - 10x = 37$

20. Create algebraic expressions for the following situations.

- Seven more than a number.
- Fifteen less than a number.
- Thirty five subtracted from twice a number.
- Fifty subtracted from a number.
- Triple seven more than a number.
- Twice the sum of 14 and a number.
- One less than a tenth of a number.
- Half the number subtracted from eight.
- One tenth of the number is 15.

21. Write the following expressions as words.

a) $x + 2$

b) $3(x - 5)$

c) $4 - \frac{x}{7}$

d) $\frac{17+x}{3}$

22. Katie has some pencils. Sofia gives Katie 4 more pencils. If Katie has 10 pencils now, how many pencils did Katie have?

23. Al's age is one more than half his dad's age. If Al's dad is 50 years old how old is Al?

24. The sum of three consecutive odd integers is 45. What are the numbers?

25. Ms. Philip goes to the store and buy five pens and a notebook. The notebook cost \$2.50 and she pays \$15 at the counter. How much does a pen cost?

26. Three friends Al, Ben and Carl take part in a 500 m relay race. Al covers five more meters than Ben. Ben covers five meters less than Carl's distance. How much distance did each of the cover?

27. The sum of three consecutive integers is 153. Find the numbers.

28. The difference of two number is 60. If the larger number is 146, what is the smaller number?

29. The area (A) of a rectangle depends on its length (x) according to the equation, $A = 80 - 2x$.

- What is the area of the rectangle when the length is 5 cm?
- If the area of the rectangle is 24 cm^2 , what its the length?

30. Soren buys some pencils worth \$0.50 each and some books worth \$2.50 each. If Soren spends a total of \$22 at the store. Write an equation to represent this situation. Find out how many pencils he bought if he buys 7 books.
31. Mr. T wishes to buy 60 TPS hats for all students of TPS. If each hat costs \$11 write an equation to represent this situation. How much would it cost Mr. T? How much more will it cost if he decides to buy 70 hats?
(Hint: Use the following variable:
Let x represent the total number of hats bought.
Let C represent the total cost)
32. A bag contains some apples and mangoes. The weight of an apple is 150g and a mango is 90g. If the weight of the bag is 1.26kg and there are 3 apples, how many mangoes does the bag contain?
33. Katie is using her calculator to find how many cookies she needs to bake. Before seeing the final answer she accidentally hits “-” and “8”. The new number Katie sees is 42. What was her original number?
34. Look at the table below and fill the Output column according to the problem.

Input	Output
1	
2	
3	
4	

- a) The input is decreased by 5.
b) The input is doubled then three is added to it.
c) Add three to the input and then double it.
d) The input is subtracted from 15

35. Look at the table below and fill the Output column according to the problem.

Input	Output
10	
20	
30	
40	

- a) The input is increased by 9.
b) The input is tripled then four is added to it.
c) Add four to the input and then triple it.
d) The input is subtracted from 12

36. Represent the Input and Output T-chart for problems 35-34 on a grid.